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AUTHOR Gillespie, Judith A.; Cherryholmes, Cleo H.
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ABSTRACT

The purposes of this paper are threefold: 1) to explore several ways in which rational policy-making can be approached; 2) to discuss various plausible explanations for the findings and intervention strategies which seem to be consequent with those explanations; and 3) to determine the strengths and weaknesses of various specific intervention strategies in light of the findings and explanations. The problem facing educational policy-makers who desire the further educational achievement in a way dictated by explicit normative theories spelling out purposes and empirical research is explored. Alternative explanations for null educational research findings on student achievement are discussed and intervention strategies associated with each explanation are noted. It is concluded that the most salient alternatives in social education fall largely into the same general approach to problem-solving and that the significantly different social action alternatives require a complex set of decisions regarding implementation and potential effects on achievement. (Author/SHM)

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THEORY INTO PRACTICE: PROBLEMS OF RATIONAL POLICY-MAKING IN A WORLD WHERE THE NULL HYPOTHESIS DOMINATES

Judith A. Gillespie
Social Studies Development Center
Indiana University

Cleo H. Cherryholmes
Department of Political Science
Michigan State University

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THEORY INTO PRACTICE: PROBLEMS OF RATIONAL POLICY-MAKING IN A WORLD WHERE THE NULL HYPOTHESIS DOMINATES

There is increasing evidence that several traditional assumptions that educators have held concerning the effects of American education are in error. We have generally assumed that the education provided in schools has tended to equalize opportunity and that what we do in schools has had some independent effect on educational achievement (Jencks, 1972, p.7). Now there is reason to believe that educational policy makers can no longer act on these assumptions with sanguine confidence.

The evidence comes from two major sources. There is a sociological literature that has developed around the Coleman report (1966) and a voluminous educational research literature. Coleman states:

> "...probably the most important result is ... that characteristics of facilities and curriculum are much less highly related to achievement than are the attributes of a child's fellow students in school." (1966, p.316)

Combined with other previous research, such as Project Talent (1967), and later reanalyses contained in Mosteller and Moynihan (1972), and Jencks (1972), the sociological evidence, whether of cross-sectional, quasi-longitudinal, or longitudinal form is unanimous in the general conclusion that between school differences have very little effect on the educational achievement of individual students.

Although the general findings have been widely discussed, it is useful to list the highlights. Coleman found that for most of the school population studied, over 90% of the variance in educational achievement was within school and not between school

variance. It was then shown that after controlling for six student background variables, per pupil expenditure accounted for less than one-half of one percent of educational achievement for 6th, 9th, and 12th grade students in the North (Coleman, 1966, table 3.24.1).

Jencks (1972A) summarized the major findings as:

1) Most black and white Americans attended different schools.

2) Despite popular impressions to the contrary, the physical facilities, the formal curriculums, and most of the measurable characteristics of teachers in black and white schools were quite similar.

3) Despite popular impressions to the contrary measured differences in schools' physical facilities, formal curriculums, and teachers' characteristics had very little effect on either black or white students' performance on standardized tests.

4) The one school characteristic that showed a consistent relationship to test performance was the one school characteristic to which most black children had been denied access: classmates from affluent homes." (p.69)

The findings generated considerable controversy. The sample of schools, the statistical analysis, and other aspects of the study were called into question. This has produced a debate that has continued to the present (Harvard Educational Review, February, 1973). It is noteworthy, however, that all of the major findings have withstood these varied criticisms, we are left with a legacy of doubt concerning the efficacy of schools at the institutional level, and we continue to grope for empirical findings which might serve to enlighten policy alternatives.

If we are unable to distinguish between schools in terms of educational achievement, then it may be possible to uncover variables at the sub-institutional level that may explain achieve-

ment. Unfortunately this is not generally the case. There is an enormous body of educational research that reports nonsignificant differences between experimental and control conditions. There is good reason for doctoral students to fear finding "no significant differences," for this statement characterizes an embarrassingly large number of studies.

Not only do surveys of educational research provide little relief from the important null findings of Coleman, they are actually complementary -- they report null results in different areas. Stephens (1967) reviewed at some length a large number of summaries of individual pieces of educational research and concluded that "no significant differences" accurately describes the effect of many different educational treatments on educational achievement. Some of the findings from different categories can be listed as follows:

1) "When intelligence is held constant, the correlations between attendance and achievement cluster between .10 and .20 ..." (p.73) (Authors' note: of course the coefficient of determination then ranges from .01 to .04.)

2) What about teacher-student interaction? "from some hundreds of experiments (Schramm, 1962), we can detect no clear difference between the results achieved by instructional television and those from other procedures. Of the 393 investigations, 255 reported no significant difference. Of the remainder, 83 favored television, and 55 showed an advantage for the regular classroom." (p.74)

3) There is a general lack of relation between size of class and achievement. (p.75)

4) In general there is no relationship between increasing the intensity of the instructor's attention to certain students and educational achievement. (pp. 76-77)

5) Generally there is no relationship between amount of time spent studying a topic, the amount of distraction as measured by extracurricular activities, etc., size of school and academic achievement. (pp. 77-79)

6) There are no systematic differences between discussion and lecture, group-centered versus teacher-centered instruction or use of frequent quizzes in production of greater achievement. (pp. 81-82)

Thus the educational research literature generally tends to uphold findings that parallel those of the Coleman studies.

There is a third body of research that provides an interesting contrast to these findings. Amount of formal education is an important variable in social scientific research. Years of schooling is correlated with political attitudes (Stouffer, 1955), rates of political participation (Milbrath, 1965), income (Jencks, 1972), occupation types (Jencks, 1972), and many other variables. Even though we have considerable difficulty in identifying those characteristics of schools that make a difference, schools themselves do seem to make a difference. The longer individuals stay in school, they tend to acquire, whether by school experiences or a complex self-selection process, characteristics that distinguish them from those with less formal education. The schooling-no-schooling effect also shows up with respect to educational achievement:

> "... the City of New York reported a loss of two months in reading level for the year 1968-69 owing to the two-month teachers' strike. The Acting Superintendent of Schools, Dr. Nathan Brown, said: 'Since the decline cut across every section of the city, I must conclude that schooling does mean something. Some people have said that children learn regardless of school, but here we have a situation where there was not a full school year and the children did suffer.'" (Mosteller and Moynihan, 1972, p.27)

When these findings are coupled with those previously discussed, the dilemma is clear. In one area there is a large research literature that does not allow us to distinguish between potent and impotent schools and educational treatments, whereas other research provides considerable evidence that amounts of schooling do make a difference in educational achievement.

There are thus no simple solutions for the policy-maker arising from these findings. Yet, the general problems surfaced here should stimulate rather than immobilize constructive attempts to deal with educational problems. Therefore, the purposes of this paper are:

1) to explore several ways in which rational policy-making can be approached under these circumstances;

2) to discuss various plausible explanations for the findings and intervention strategies which seem to be consequent with those explanations;

3) to determine the strengths and weaknesses of various specific intervention strategies in light of the findings and explanations.

Surely, thorough discussion of these topics and their implications for policy-making necessitates a book and not a brief paper. The intention here is to surface some ideas which we hope will aid in some constructive thinking about the problems raised by recent research.

Rational Policy-Making and Scientific Explanations

It is a fact of our condition that we must act in the face of uncertainty. Some uncertainty characterizes all human actions, but beyond certain levels uncertainty raises the question of behaving

rationally in any broad construction of the term. We will view rationality within a simple decision context:

1) Educators, social scientists, and public officials must make decisions concerning school policy.

2) Decisions ensue when an individual (or a group) is confronted with a problematic situation and seeks some value (by some calculus -- maximization, optimization, satisficing, etc.) on the basis of information about the situation by choosing some alternative course of action.

3) A rational decision is the choice of an alternative that furthers a selected value (regardless of the calculation involved).

The dilemma confronting the policy-maker is obvious. Choices must be made, but if the situation is very ambiguous and nearly random, then one does not know which alternative is related to which end, or even if proposed actions are related to desired ends.

We could use rationale in a weaker sense, associated with some of its uses in game theory, in which one can still behave rationally in uncertain situations by mixing strategies and employing stochastic choice processes. Given the problem we have outlined, this usage of rationale seems trivial and in any case is unworkable because of the complexity of the decisions.

Rationality could be defined in still a third way. A narrow usage of rationality could be employed in which the goals pursued are personalistic, where the educational policy-maker makes decisions which protect his own position. He seeks to protect his organization and his place in the organization by his decisions.

Rationality in this sense can exist unrelated, for the most part, from the findings from research studies.

For the time being we will use the first meaning of rationality. In the broad sense we will explore the problem facing educational policy-makers who desire the further educational achievement in a way dictated by explicit normative theories spelling out purposes and empirical research. The first step is to deal in some systematic way with the null hypotheses discussed above. If it is possible to explain these findings, the explanation(s) may suggest guidelines for the rational policy-maker.

Though the logic of discovering theories and explanations has escaped philosophers and psychologists to the present, we do know the logical requirements involved in discovering such alternatives. If we believe X_1, X_2,...X_N to be the case (that differences in what educators do <u>should</u> make a measurable difference in student achievement), but outcomes Z_1, Z_2,...Z_M obtain (no systematic or extremely small systematic difference exists between schools or treatments) that are not predicted by our earlier hypotheses, then we either abandon that earlier set or add a set of hypotheses Y_1, Y_2,...Y_0 so that we can deduce the set of observations A from the conjoint sets X and Y. Hanson (1958) has discussed this method of retroduction or abduction in some detail. The essence of retroduction is:

> "whether, <u>before</u> having hit a hypothesis which succeeds in its predictions, one can have good reasons for anticipation that the hypothesis will be of some particular <u>kind</u>." (Hanson, 1969, p.75)

It is this general principle that guides our search for explanations

of the research findings cited above. If we seek an additional explanation to the one implicit in the Coleman report, the explanations must be due to important characteristics common to students and schools, thus the similarity of schooling effects and the difference between schooling and no-schooling. In other words, most research has been designed to determine how variation in intervening variables such as exposure to various curricular or teaching treatments affects variation in achievement outcomes. The conclusion we draw here is that there may be overwhelming common or constant characteristics in treatments which explain the lack of explanatory power of those variables. We will explore the implications of this statement in the pages that follow.

Explanation 1: Spontaneous Schooling. After documenting an incredible number of null findings from educational studies, Stephens developed a theory of spontaneous schooling (Stephens, 1967). He maintains that there are a number of spontaneous tendencies operative in adults that create a wide variety of learning situations that children take advantage of and that these situations produce a rather constant level of cognitive growth. Briefly, the natural tendencies are:

> "Spontaneous manipulative tendencies:
>
> "1) The cluster of playful, manipulative tendencies, which lead many people to stress matters that have little immediate payoff and which other people treat indulgently.
>
> "Spontaneous communicative tendencies:
>
> "2) Spontaneous tendencies to talk of what we know.

"3) Spontaneous tendencies to applaud or commend some performances and to disapprove or correct other performances.

"4) Spontaneous tendencies to supply an answer which eludes someone else.

"5) Spontaneous tendencies to point the moral." (p.58)

Given these tendencies, the common background factors children bring to school, common maturation processes, commonality in teaching styles even when an experimental approach is being evaluated against a control, Stephens hypothesizes that it is possible that as much as 95% of the forces responsible for growth are shared by the experimental and control groups. (p.84)

We can quickly locate the spontaneous schooling formulation in a more general context by referring to the stimulus-organism-response model of learning as an analogue. What Stephens seems to be hypothesizing is that there is such a high level of constancy across students, the organisms in this case, that variations in the stimulus wash out leaving a residual, common response. A response that is uncorrelated with school and treatment effects.

Stephens proposes that the characteristics responsible for growth come from two sources, background factors and attributes that individuals bring to the learning situation. One might argue that this includes both psychological and sociological factors. In fact Stephens forgoes a sociological argument in focusing on the student-teacher interaction and for the most part ignores the social setting. This is essentially a psychological explanation of the null effects that includes references to the common consequences of similar stimulus conditions, at the level of the teacher, and similar organism characteristics, similarity among

students. We will also employ the S-O-R model in the next explanation, which is sociological.

Explanation 2: Constancy of Schooling. Whereas Stephens provides a yet to be tested psychological explanation for many of the null findings, we propose a sociological explanation of these same findings. We suggest that the administrative, social and political environment of schools reduces and depresses the effects of any potential between-school and treatment variance that might be suggested by differences in per pupil expenditure, teacher training, teaching style, curriculum, etc.

The argument for constancy of schooling can only be roughly sketched at this time, but it can be built around three major premises. First, there are some essential constancies in school environments which have not been overcome by various treatment effects. For example, most schools generally have similar physical layouts (offices, classrooms) and similar divisions of administrator, teacher, and student roles and responsibilities. Most efforts at educational reform have not made fundamental changes in these organizational constants. Second, the variety of ways in which various school social and political environments influence students tends to reinforce existing differences in student backgrounds. Student peer groups tend to reinforce family and social class norms and student participation in school affairs is based on a self-selection process which tends to reinforce participation patterns stemming from students' backgrounds. Finally, although different organizational variables might operate to

influence achievement, they certainly have not been tapped by the instruments developed in the sociological and educational studies done up to this time. The conclusion of the argument is thus one that present school environments tend to minimize the chances of successful interventions. Because interventions have not tended to make serious attempts to change either the fundamental social and political structure of school environments or to change measures of success, the assessment of these interventions supports the null hypothesis.

The argument is thus built around a number of assumptions concerning the social organization of American public schools. There is an essential similarity among American public schools from physical layout to administrative organization to curriculum. American schools tend to look alike. They tend to be characterized by long corridors with adjoining rectangular classrooms. Organizationally, they are hierarchies. Administrators exist at several levels and provide direction and make decisions for teachers and teachers provide direction and make important decisions that guide student's attention and behavior. Schools in America are increasing in average size as urban schools gain students and small rural schools are phased out. Because they are fairly complex organizations considerable time is taken in simply maintaining the organization. Attendance is taken, lunch money is collected, school pictures are taken, etc. Students tend to be located into classes of 30 students more or less to a teacher and are provided with a curriculum and texts that in the usual case

neither they nor their teacher participated in selecting.

This common social and politican structure produces similar kinds of organization maintaining behavior. Teachers are concerned with order (Willower, Eidell, and Hoy, 1967); students with avoiding trouble with the staff (Cusick, 1970). The organization becomes an end in itself. Time studies might suggest that an inordinate amount of time is spent on non-academic, organizational activities. It is important to note that the organization need not be repressive but that the needs of maintaining order and the demands this may take in developing personal relationships across status levels, accommodating administrative directives, and maintaining social regularity may lead to the subordination of educational achievement as a goal of the organization. Achievement may then become individualized to the point that between school and educational treatment variations disappear.

Along the same lines, most students have no choice about attending school, what school they will attend, the social and racial composition of the school, the teachers to which they are assigned, the competitive structure for marks, the subjects they study, and the allocation of their time during the day. Coleman (1961) concluded that the social structure of the school detracted from educational values to the extent that we should make serious attempts to utilize the group structure of high schools in a way to reinforce educational concerns. Cusick (1970) demonstrates convincingly, albeit through a case study, that the social structure of a high school does not reinforce educational values. The group structures of high school students fulfill the social needs

of their members by occupying the large amounts of free time in schools where students are waiting for the next activity to begin. The social activities of high school groups carries into classroom settings and acts as a buffer between the student and the educational establishment. Achievement occurs but it is individual achievement. Because participation is both individual and self-selected, student activities tend to simultaneously blot out treatment effects and reinforce students' background differences.

It is possible to analytically distinguish between Stephens' psychologically based spontaneous schooling theory and our proposed school constancy theory by again referring to the simple stimulus-organism-response model. Whereas Stephens posits constancy in the organism and its immediate psychological interaction with the environment that depresses variations in responses, the school constancy theory focuses on the sociological nature of the environment and the stimulus. Thus, the stimulus tends to be constant or reinforcing and this fact, regardless of the visible differences in the schools and educational treatments, depresses response variation.

We conclude, then, that although schools may vary in many obvious ways, that there are constant environmental factors which are ignored by most educational treatments (Wittes, 1972) and which act to diminish the effects of these treatments on students either by subverting them or reinforcing student background variables. This is not to say that differences in students' positions in school environments do not have demonstrable effects on their development, (several studies demonstrate the opposite: McPartland,

1971), but rather that the self-selection process and the measures that are used to define achievement mitigate against determining the independent effects of the social and political environment on student achievement in any clearly distinguishable way.

Explanation 3: Spontaneous Learning in a Constant School Environment. An obvious attempt to explain the null findings would be some combination of the spontaneous schooling and constancy of schooling theories. In their present non-formalized state there appear to be no contradictory assumptions in either theory. They simply focus on different clusters of independent, explanatory variables. Therefore, it is plausible that the findings are attributable to a general "sameness" of stimuli whether at the teacher, curricular, or school level, and a general capacity for students to learn. At this point it is not clear, however, whether such a combined explanation is additive or interactive or what weights would be attached to each component of the model in these two forms. Without this information it would be difficult to rationally plan an intervention strategy using this explanation. The "full speed ahead on all fronts" might not be possible in that some experiments with school organization would be incompatible with Stephens' intervention suggestions. The choice of what to emphasize must await non-null, empirical research findings.

Explanation 4: Social Class Background and Schooling. A fourth explanation of the Coleman findings is fairly explicit in the findings themselves. Two important factors seem to be related to

learning (after ability as measured by IQ tests is held constant). First, the social class background of the different homes children come from differentially reinforces values related to education and produces responses that vary across social class levels.[1] Second, the findings testify to the importance of peer groups and achievement which Coleman documented earlier in another study (Coleman, 1961). Students clearly pay attention to what their peers think is important, and what their peers think is important is related to the social class background of their parents and immediate classmates. McDill, Myers and Rigby (1967) clarified this relationship by demonstrating that there is no general relationship between student achievement and the social context of the school, but achievement is related to home environment, scholastic ability, academic values, and to pressures applied by other participants in the school setting.[2]

Coleman (1972) finds the explanation of the findings in the study itself. Social class and social interaction explain a large portion of the variance in educational achievement. In terms of the stimulus-organism-response model, these variables: (1) constitute the social context within which the stimulus is generated, perceived, and transformed into a response, and

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[1] Stephens might argue that the relationship of social class to educational achievement is a function of the constant curiosity and capacity of children to learn being stimulated at different rates and in different directions across social levels as well as being measured in such a way to advantage those above the working class.

[2] In terms of the school constancy theory we argue that between school differences in academic emulation is one of a class of variables that might produce significantly different stimuli to students that will be related to achievement.

(2) determine the immediate conditions in which a student will be attentive or inattentive to the stimuli. The setting, thus, so dominates the attitudes and behavior of students that variations in schools and treatments have relatively little independent effect on student responses.

After accepting the importance of social class and peer group characteristics of students as determinants of educational achievement, Coleman proceeds to distinguish "schooling" from "education."[3] Schooling refers to those cognitive skills and acquisition of knowledge most commonly associated with the traditional view of schools. Schooling refers to instruction in reading, mathematics, etc. Education refers to a much more general category, e.g. skills in interpersonal relations, work habits, or the development of mechanical and carpentry abilities. Whereas schools are uniquely designed to promote schooling, Coleman suggests that education might best be performed by the community at large. The proposal, then, is to let the child spend a good deal of time in the community, learning and apprenticing in different jobs or working with social agencies. The idea is to break down the isolation of the schools and provide children with a broad-based introduction to economic institutions. His main hypothesis is thus that because students' social class background dominates the potential effects of education in schools, alternative community

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3 This is essentially the same distinction that Carl Berieter makes. Their arguemnts, once the distinction between schooling and education is admitted, take roughly parallel paths. It is noteworthy, however, that Bereiter insists on separating the two terms because of moral considerations and Coleman because of the results of educational research.

institutional settings should be introduced which can maximize student achievement in occupational roles. He also hypothesizes that a broader definition of educational outcomes would reduce to some degree the relationship between social class and educational achievement. In part this would occur because current measures of achievement have an academic orientation which favors children from socially advantaged home backgrounds.

Each of these explanations serves as an alternative way of making sense out of results of educational research on student achievement. As alternatives to the null hypothesis, the four explanations imply different intervention strategies for policy-makers who are forced to choose between alternative action strategies. These intervention strategies are the subject of the next section.

Intervention Strategies

Table One summarizes the four explanations of the research and the intervention strategy suggested by each:

Table One: Alternative explanations for null educational research findings and intervention strategies associated with each

Source	Explanation	Points of Intervention
Stephens(1965)	Spontaneous Schooling	Changes in affective teacher characteristics
Cherryholmes & Gillespie (1973)	Constancy of Schooling	Major school social and political organization changes
	Spontaneous Schooling & Constancy of Schooling	Combination of above
Coleman(1972)	Social Class and Schooling	Decrease isolation of schools and utilize community agencies in education

A number of problems are involved when the probabilities of success for each of these intervention strategies are assessed. In every case, the definition of success hinges upon the definition of educational achievement that is employed. What has occurred in explaining the failure of schools to work as hypothesized has led to some redefinition of the meaning of educational achievement. Coleman is the most direct in arguing for measures of achievement that do not artificially increase the performance of children from middle class backgrounds. Stephens also suggests the use of separate agencies and this involves rethinking the goals of education.

Radical reorganization of schools clearly emphasizes the importance of social and political attitudes and participation in representative decision-making systems that have not generally been included in definitions of achievement. Thus each intervention strategy will effect variables in addition to achievement as conventionally measured. In estimating the potential impact of each of the approaches, two considerations will be kept in mind: (1) how might achievement patterns be altered? and (2) what additional variables will be effected?

If Stephens is correct in his guess that as much as 95% of the factors that account for learning are constant and not subject to manipulation across learning situations, then it is not likely that paying attention to selected teacher characteristics, the use of dedicated specialists and separate agencies is likely to have a large impact on educational attainment. He grants the marginal impact of these policies and concludes that professional educators and interested laymen should take a much more relaxed

attitude toward schools, not be afraid to experiment, and when experiments are tried they should have modest expectations. Benign neglect may be too strong a term to use, but it certainly captures the flavor of such an approach.

Experiments with school organization are proceeding through the experience of alternative schools. There is little systematic research, however, that indicates the efficacy of these programs in increasing educational achievement, and it is likely that their goals do not include achievement in any conventional sense. This approach to educational change, however, is so untested that it is impossible to speculate in any meaningful sense about the impact of social structural changes on educational achievement.

There are, however, both many different types of social organizational changes being tried and some research on the effects of these changes on achievement related variables, if not on standard achievement variables themselves. Some of these changes are being undertaken independently by schools themselves (Wiltes, 1972; Jacoby, 1972). In largely unique ways, these schools are changing authority relationships and surfacing meaningful student roles through markedly different change processes. Also, some major efforts have been made by agency-sponsored projects to increase student involvement and skills in school and community participation efforts (Wiley; Jones, 1973; Gillespie, 1972; Lefkowitz).

The general significance of these efforts in relation to student achievement has yet to be determined. The claim is often made that students are enthusiastic about opportunities for parti-

cipation, but often disillusioned after sustained efforts do not offer solutions to problems. Indeed, McPartland (1971) and Barker and Gump (1964) have found that increases in student involvement can have direct effects on students' abilities to make decisions and capacity to take responsibility for action as well as producing some indirect positive effects on academic orientations. One think is certain, if school organizational changes are to be measured with any sensitivity at all to their potential effect on achievement, important attitudinal, skill, and substantive dimensions need to be added to standard achievement measures.

In combining these two theories, two basic theoretical considerations emerge. The effects of school social structure and individual learning capacity may be additive or interactive. Interactive models are necessarily more complex and because we have no a priori reason to believe that the psychological and sociological explanations are related, we will forego a discussion of that possibility. In the additive case, if either or both of the previous explanations are true, then policies based on their combined utilization will be effective to the extent that each is successful independently.

The potential impact of a program built on Coleman's outline seems to be the strongest of the four explanations. The strength of the explanation derives from the research: achievement is not related to individual or school characteristics but to the social class and peer group characteristics. These relationships are quite strong. Therefore, a strategy that relies less on school experience and more on social and economic institutions in the

community promises to be an efficacious strategy. This is so because focusing on social and economic institutions for educational purposes puts education in the hands of those settings which support different social class norms. Student awareness of and experience in various settings should promote achievement by students of various class backgrounds as well as an equalization of opportunity and occupational pursuits. Changes initiated in this direction should then contribute direct and important effects on achievement for all students.

If we were to order the strength of each intervention strategies beginning with the strongest, Coleman's explanation would be followed by the combination of the psychological and sociological (presuming that this model is additive), then the sociological, and finally the psychological. The only real debate would seem to center on the ordering of the sociological and psychological theories. Like the other rankings, these rankings depend on particular ways in which arguments are framed. When we argue from a sociological or environmental base we include a long educational tradition which runs from Skinner (1968) through "deschooling" approaches which states that altering the interpersonal environment of students has a dramatic effect on both motivation and learning. This tradition also offers a good fit to Coleman's proposals, for if school organizational changes could be made such that the school itself could be a viable analog for a "community" then the school could become an effective location for the integration of "schooling" and "education." In effect, Coleman's argument would be turned inward rather than outward toward the community. At the moment, Stephens' argument comes to

terms with achievement through benign neglect, but does not offer a viable body of relating psychological predispositions with achievement or a mechanism through which psychological variables can be empirically identified. It would, therefore, be difficult to determine a course of action that could be independently identified with particular psychological changes which would affect achievement.

It is no more speculative to order these strategies by the probability of their adoption than it is to wonder about the final effects of such a strategy. A single criterion producing a single dimension will be employed, how much bureaucratic change and investment of organizational resources is involved in each approach? It is hypothesized that as increasing amounts of organizational inertia are encountered, the likelihood of diffusion decreases. The most difficult to implement thus appears to be the Coleman suggestions that entail a relatively major change in the relationship of the school to the community, different patterns of secondary education, and thus the creation of educational organizations, especially secondary schools, of a vastly different character than now exist. Using this criteria of bureaucratic costs, the second most expensive set of policies are those associated with school reorganization and teacher selection. The costs are reduced from the Coleman example by moving our attention from the community and the school to the school itself. It is obvious that fewer organizational costs are incurred in teacher selection programs than in programs that involve large numbers of participating students and staff. These considerations allow us to rank order

these approaches in terms of probable adoption. Educational decision makers are likely to adopt the teacher selection strategy of Stephens and his "prescription for relaxation," followed by social and political changes within school experiments, then the combination of both of these, and finally the school-community alliance suggested by Coleman. Table Two illustrates an interesting relationship between these rankings.

Table Two: Explanations for null educational research findings ranked in terms of their probable potency for educational change and their probability for implementation

	Rank Orders	
Explanation	Probable Potency for Change	Probable Adoption Rates
Coleman	1	4
Psychological and Sociological	2	3
Sociological	3	2
Psychological	4	1

It appears that an inverse relationship exists between the hypothesized strengths of the different policies and their probable adoption rates. This is intriguing, but not at all surprising. Table Two hypothesizes at a more general level that, other things being equal, the more people and social institutions in numbers as well as variety that are involved in an educational program the more impact it is likely to have. At the same time, other things being equal, it is more difficult to acquire the support of more individuals and social institutions as they increase in members and variety. Of course, other things are never equal,

but it is not likely that the policy -maker will find it easier to make decisions based on these firdings. The application of these findings to specific approaches to social education and their implications for the policy-maker will be the focus of the final section.

Specific Intervention Strategies and Their Implications

In an earlier paper (Cherryholmes and Gillespie, 1972) we explored implications of four approaches to social education. In that case we demonstrated that the positions staked out by Hunt and Metcalf (1968), Engle and Longstreet (1972), Oliver-Shaver-Newmann (1957; 1966; 1970) and Cherryholmes (1971) were quite distinct in their conceptualization of the goals of social education, implicit social philosophies, and cognitive and affective orientations. We will now readdress those schemas in terms of probabilities of acceptance and effect.

There are a number of ways in which normative theories do not take a neutral stance toward the world. One of the most obvious is that they select a set of values to be sought in some fashion. What is less obvious is that the values to be pursued in turn act to select a class of appropriate intervention strategies. All intervention strategies are not appropriate to all values, regardless of the value that might be sought in a particular instance. Thus Oliver-Shaver-Newmann advocate a jurisprudential approach to value clarification and this presumes the presence of an instructor who is trained in leading open-ended, reflective discussions. If we put this requirement in the context of the

foregoing discussion, it becomes evident that the approach of Oliver-Shaver-Newmann would focus on the individual teacher and provide the teacher-person with some skills and orientation in addition to Stephens' sense or mission, etc. It follows that this particular strategy is one of a class of strategies likely to be adopted, at the same time being one of the least potent. At least this follows from our previous analysis. The diffusion and research based on the Harvard materials confirm both of these after the fact predictions.

Hunt and Metcalf (1968) also are led to a teacher-based program in their emphasis on reading consensus on the meaning of democracy through the exploration of the closed areas of society. Again this program would capitalize on the teacher skills mentioned by Stephens, and add a substantive orientation to the teacher's sense of mission, that of promoting agreement on the meaning of democracy. This, again, is a most likely kind of strategy in terms of adoption and is a least effective type in the production of measureable changes.

Engle and Longstreet (1972) highlight the importance of informed decision-making in a rapidly changing Twentieth Century. Different models of decision-making are offered and selected action concepts are presented. The teacher model presented by Stephens in this case is overlaid with a set of decision and problem solving skills that are passed on to the students. The method requires an intervention strategy that is likely to be used with little effect.

Cherryholmes proposes a model of social education aimed at developing the efficacy of students in social and political situations. This entails awareness and skill in utilizing different social scientific decision models, that include value analysis, and information processing skills, which is followed by planning alternative futures and preparing the students to be continuous learners. If these goals are pursued in the classroom, then it is possible for it to be diffused with little effect. To the degree that the skills associated with the model, information processing and decision skills, pursued outside the classroom, then it becomes more potent and less likely to be diffused.

To a surprising degree, from the viewpoint of this analysis, these four theories are much more similar than different. To the extent they rely on the classroom setting in its general physical and social organization, there is little reason to expect experimental differences to occur. Thus there is little to choose among them except that one might feel more comfortable with one orientation than with another. This of course leads us back to the rationality problem with which we began. There is no reason, given the educational framework and findings which we introduced earlier, to choose one of the models over another. Rationality is then expressed in terms of personal or school ideologies without reference to measureable effects.

Two recent approaches break out of this heavy reliance on the traditional organization of schools. Newmann (1972) has proposed a social action curriculum in which students become actively involved in public policy decisions, primarily at the local level.

Gillespie and Patrick (1972) propose using the high school as a laboratory for political analysis and participation in a 12th grade course in Comparative Government.

The social action curriculum shares many of the same thoughts with Coleman's proposal to increase dramatically the cooperation between schools and other community institutions. The effect on students of such a program we hypothesize to be quite strong, but the chance of widespread problems in developing such programs seems to make their chances for widespread diffusion low.

Using schools as a laboratory for experiments in decision-making and political participation is quite intriguing. There remain a number of empirical issues to be solved concerning this model. For example to what extent can the experiments change the strength and nature of academic stimulus? Can such experiments involve sufficiently large numbers of students to penetrate in a meaningful way the attitudes and cognitions of the student body. Depending on the answers to such questions we are left with questions about either the effect or the likelihood of diffusing such a model. It may be that within this one approach we find a minature of the larger problem: the stronger the educational impact of the political laboratory experiments, the less generalizable and attractive the model will be to other schools.

The conclusions we reach from looking at research data and potential explanations and interventions do not make the job of the policy-maker seeking a rational way of cutting through educational problems any easier. One of the most significant conclusions here is that most salient alternatives in social education

fall largely into the same general approach to problem-solving. On the other hand, the significantly different social action alternatives require a complex set of decisions regarding implementation and potential effects on achievement.

Clearly, the policy-maker's choice of intervention strategies depends upon his or her values and the calculus under which the potential for change and the problems of adoption are considered. Our purpose here has not been to make judgments regarding this calculus, but to lay out some ways of thinking about problems of intervention raised by educational research findings which we hope will aid the clarification of alternative intervention strategies and their implications.

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